

## ABSTRACT

A method for creating improved homogeneity in magnetic flux density in a radio frequency resonator for magnetic resonance imaging and spectroscopy of the human head.

5 A tapered birdcage resonator is also provided. The tapered birdcage resonator includes two electrically conductive rings and a plurality of rods or conductor legs. The first electrically conductive ring forms an inferior end of the coil. The plurality of legs extends from the first electrically conductive ring. Each of the plurality of legs has a linear portion and a tapered portion. The second electrically conductive ring forms a superior end of the coil and is connected to the tapered portion of the plurality of legs.